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ABSTRACT

This study examines how 105 disabled college students' characteristics (i.e. age, disability, and sex) and use of supportive services relate to self-reported study habits and methods as measured by the Study Attitudes and Methods Survey. Results reveal the post-test scores drop by about 10% regardless, and drop again by about 4% for every 10 points on the usage index, but increase about 10% for every 10 years increase in age. The percentage of change was found to be independent of sex and the disability index. Implications for personnel involved in working with disabled college students are discussed. (Author)

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INTERRELATIONSHIP OF DISABLED COLLEGE STUDENT'S ATTRIBUTES, PROGRAM USE, AND STUDY ATTITUDES

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ABSTRACT

INTERRELATIONSHIP OF DISABLED COLLEGE STUDENT'S
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This study examines how disabled college student's characteristics (i.e. age, disability, and sex) and use of supportive services relate to self-reported study habits and methods as measured by the Study Attitudes and Methods Survey. Results reveal the post-test scores drop by about 10 percent regardless and drop again by about four percent for every 10 points on the usuage index, but increase about 10 percent for every 10 years increase in age. The percentage of change was found to be independent of sex and the disability index. Implications for personnel involved in working with disabled college students are discussed.

The increasing participation of physically disabled students in American colleges and universities is a recent development in higher education. Private and public expenditures for higher education augment the handicapped person's ability to enrich their contribution to society through greater involvement in the community. New careers are opened and occupational choices are broadened through the completion of a college degree. Thus, the university can prepare the student for economic independence and self-sufficiency. The question which remains is: How can we improve retention of disabled college students?

The importance of assessing the relationships between service programs, client characteristics and attitudes in order to understand client progress has not gone unrecognized by educational researchers. Many attempts have been made to demonstrate how these factors relate to one another. However, the majority of the studies examine two of the three factors and are based on non-college populations (Barker, Wright, Meyerson & Gonick, 1953; Wright, Reagels, & Thomas, 1971).

On the other hand, research has repeatedly shown that non-disabled students with certain attributes perform better academically. Included in these attributes are a motivation for achievement, good study habits, seriousness in schoolwork, lack of study anxiety and involvement in the academic environment (Astin, 1971; Robinson, 1970; Michael, Michael & Zimmerman, 1972).

Although the belief that good study habits and methods are important is widely accepted, research has not adequately delineated how disabled college student's characteristics and program use relate to self-reported study habits and methods. The present research attempts to describe some of the existing relationships. The objectives of this study were as follows: 1) To see if the differences on self-reported pre- and posttest raw scores are due to age, disability, or sex by themselves; 2) to observe the residual posttest scores

after adjusting for the pretest as a function of age, program use, or sex by themselves; and, 3) to examine the percent of change scores as a function of age, program use, or sex by themselves. A better understanding of these relationships might assist program personnel to identify disabled persons who might require more extensive assistance.

METHOD

Sample. The study population consisted of 105 disabled freshmen who entered a large urban university during the fall quarter of two academic years (1974 and 1975). Complete data exist for 83 students (58 males and 25 females). Disabled students identified themselves by their self-description on the student health survey form. Students who applied for services from the handicapped student services program because of problems related to a disabling condition were also included. The existence of the disability, age, and sex was later confirmed by each student when he or she completed a research data sheet.

Variables. Dependent variables were scores on the Study Attitudes and Methods Survey (SAMS) a paper-pencil multiple choice, self-report technique. It is used to assess the dimensions of attitude, motivation and study habits important to academic success (Michael, Michael & Zimmerman, 1972.)

The SAMS contains six subscales each measuring a specific quality. The qualities measured include: student's pleasure gained in doing academic work (Academic Interest), energy expended to succeed in academic work (Academic Drive-Conformity), set of working styles in completing school assignments or preparing for exams (Study Methods), degree of uneasiness in completing school assignments or taking exams (Study Anxiety) use of power or influence in enhancing their academic status (Manipulation), and feelings of being isolated or rejected in the academic environment (Alienation). As its title indicates the SAMS measures cognitive constructs through the first three subscales and

attitudes which may be termed personality variables by the last three subscales. Adequate validity and reliability data are provided in the publisher's manual and authors' research (Zimmerman, Michael & Michael, 1970).

For each SAMS subscale several scores were examined. The dependent variables included raw pre- and post-test scores; a residual post-test score which was calculated as the residuals after fitting post-test scores as a function of pre-test scores; and the percentage of change scores which was calculated as the difference between the post- and pre-test raw score divided by the pre-test raw score. Changes in the grade point averages (GPA) from fall to spring terms were also considered.

An index derived from students' use of the handicapped student services program, an index reflecting severity of the students' disability, and their age and sex were used as independent variables. Duration of the disability was initially considered as a possible determinant, but was subsequently dropped because its effect was statistically insignificant. At the end of each year a program usage index was derived by monitoring seven handicapped services (i. e. adaptive physical education, transportation, counseling, tutoring, tape library, medical care, and attendent care). Data on each student's use of program services was reported on a form completed weekly by individuals providing the service. The first step classified students' use of each service into one of four groups (1 = no use, 2 = below average use, 3= average use, 4 = above average use). Secondly, services were arbitrarily weighted as to their relative importance in assisting severely disabled students on campus. For example, attendent care was assigned a weight of five and transportation one. Finally, a composite program usage index was derived by summing the individual's weighted scores over the seven services. The resulting index ranged from 7 to 51.

A disability index was also derived by examining the total spectrum of disabilities reported and rank ordering them from least to most severe. Through this procedure the most severely disabled person (e.g., blind student) would receive

the highest score. The scores on this index ranged from 1 to 5.

Procedure. Physically disabled freshman students voluntarily participated in completing the SAMS at the beginning and end of the 1974 and 1975 academic years. Participating students were also asked to sign a release form permitting the research staff the right to obtain their current GPA. Participants were paid two dollars each time they completed the survey.

Analysis. Initially, analysis of covariance was considered using the pre-test as a covariate of the post-test. However, the sample size prohibited the analysis of the continuous variables age, disability and program use as they existed without forming groups. This dichotomization resulted in the loss of available information for analysis.

Multiple regression and correlation analysis were selected as the statistical procedures because they permitted examination of relationships between the continuous variables examined. The assumptions underlying the multiple regression analysis were: 1) Program use and disability indexes created are more or less linear; 2) SAMS scores are linear; and 3) post-test scores are a highly colinear function of pre-test scores and any variance left over after adjusting for the pre-test is due to other variables which are considered.

The pre- and post-test scores were fitted against disability, age, and sex. Residual post-test and percent of change scores were considered as functions of these variables and program use. Analyses revealed that in most cases, the disability variable was not significant in the consideration of residual post-test and percent of change scores, so it was dropped from the equation involving change. The .30 level of significance was established as the trend towards significance and .10 as the criteria for significance (two-tailed test).

RESULTS

Tables 1-4 display the results of the multiple regression analyses predicting self-reported study attitudes and methods for disabled college freshmen. Tables 5-8 show the partial correlation of each dependent variable with an independent variable while controlling for the rest.

The differences in students' self-reported pre- and post-test academic interest scores as a function of disability, age, and sex are reported in Table 1. Keeping all other variables constant, results are as follows: As disability increases pre- and post-test self-reported scores on the academic interest subscale decrease at the rate of about two points for every point on the disability index; as age increases pre- and post-test self-reported scores on the academic interest subscale increase at the average rate of about 4 points for every 10 years on the age variable; and, female disabled students' pre- and post-test self-reported scores on the academic interest subscale is approximately 9 points higher than that reported by males. Examination of the residual post-test scores reveal program use and age as important variables. For every 10-point increase on the program use index, students' academic interest decreases by two points if everything else remains the same. As age increases, everything else constant, academic interest increases at the rate of 2 points for every 10 points in age.

The percentage of change score is also a function of program use and age. As program use increases, self-reported interest in academic activity decreases and as age increases academic interest increases with everything else constant.

Table 2 displays the students' self-reported scores on the Academic Drive-Conformity subscale. It was found that females on the average score 5 points higher on the pre- and post-test, with other variables remaining the same, and residual post-test and percent of change scores are a function of age.

Insert tables 1&2 about here

The third table displays the students' self-reported scores on the Study Methods subscale. Results show as disability increases student scores on the post-test decreases; as age increases student scores on the post-test increase; as program use increases student residual post-test and percentage of change scores decrease; and as age increases student residual post-test and percentage of change scores increase.

The fourth table, a composite of the first three subscales, shows disabled students' self-reported raw pre- and post-test scores on the SAMS subscales measuring enthusiasm for school and academic activities. Female disabled students' pre- and post-test raw scores are 19 percent better than males on the average as a whole on the composite pre- and post-test scores if the other variables do not change. Residual post-test and percentage of change scores are a function of program use and age. For every 10 points on the program use index the students' self-reported scores decrease 4 points on the scales facilitating academic growth if other independent variables remain constant. The disability index, although correlated with program use (.70), does not significantly explain the residual post-test score. The partial correlation between any two of the three variables (residual post-test score, disability and use) while controlling for the third shows this clearly.

The older the disabled student, everything else being constant, the higher the self-reported scores on the composite scale facilitating academic growth. The student scores increased by 7 points, for every 10 years increase in age. All three subscales contributed to this relationship.

The general picture from the composite scores shows that the scores drop by about 10 percent regardless, and drop again by about 4 percent for every 10 points in the usage index, but increase about 10 percent for every 10 years increase

in age. The percentage change is independent of sex and disability index.

Insert Tables 3 & 4 about here

Analysis of residual post-test and percent of change scores on the subscales study anxiety, manipulation, and alienation failed to reach significance when examining the independent variables.

Finally, inspection of scholastic improvement revealed it was not related to program use, disability or age. Female GPA during the fall quarter was 2.3 while their spring quarter average was 2.8, indicating an improvement of .5 which is significant at the 1 percent level. Male students' grade point average remained essentially the same. Both groups displayed approximately the same amount of disability and age, but females used 10 percent less program services.

Insert Tables 5-8 about here

DISCUSSION AND IMPLICATIONS

Robinson (1970) suggests six plausible explanations why students might not be interested in school work. Reasons for lack of valuing of academic achievement are: (1) Really preferring something else to attending college, (2) attending college as a means to an end other than learning, (3) distracting personal problems such as those involving student health, finances, or personal problems, (4) laziness, (5) lack of vocational choice, and (6) continuing immature values. A additional factor which might be considered is that disabled students are competing with nondisabled students for grades over the academic year and the novelty of the college experience might be over by spring quarter. Furthermore, at the beginning of the year disabled students might respond favorably to items such as: I like to study or I enjoy looking up information in library reference volumes. However, after a hectic year of classes students' lower scores might be an indication of the physical and social reality in which they live (Barker, Wright, Meyerson & Gonick, 1953).

The generally higher values obtained by females on pre- and post-tests might be attributable to role expectations in our culture. According to Fitzgerald (1951) a disabled physique provides a man with a poor instrument for carrying out the active, aggressive role of the male in our culture. At the same time, most males were protected and indulged at home. The net result was, in effect, the necessity of living in overlapping interfering (gratifying and depriving) situations which created mild anxiety and was manifested in unhappiness or in this situation, lack of enthusiasm for academic activities. Physical disability was not reported to interfere with the normal female role so markedly and hence does not produce overlapping, interfering situations and consequent inhibition and unhappiness or in this instance, low academic interest.

More importantly, findings have implications for modifying the delivery of program services to the disabled. The fact that both program use and severity of disability are correlated suggest that the more severe the disability the greater the need for services. To the disabled students, in many instances, assistance may be essential to the attainment of a higher education. Clearly, if physically disabled persons are to obtain their goal of an education, institutions should not only remove architectural barriers, but also make provisions for supporting services. Among the services which might be provided are: medical care, counseling, tape libraries,and attendants.

Like the non-disabled college student, the disabled student may experience a new sense of freedom when attending a university. However, this freedom may cause anxiety for the disabled student. He or she finds him- or herself in a fast paced environment with hundreds of other students, some disabled and some not, and he or she is not the center of attention. They may quickly learn that the services needed may not be as readily available or as efficient as those they were used to at another school or at home. Their readiness to participate in the supportive services depends not only on specific conditions surrounding the

task that promote enthusiasm or not, but also on the personality of the student and general attitude toward their disability. They may at this time decide it would be to their advantage to become more self-sufficient. With this in mind, the program services should strive for the proper mixture of needed services and encouragement for independence (Wright, 1960).

As this study demonstrates, students who use program services most frequently, controlling for disability, also decrease in self-reported measures facilitating academic growth. This implies that frequent usage of program services which emphasize their handicap may lead to feelings of dependency. This finding suggests that an alternative program which would provide students an incentive if they did not use or would use less of the program might be beneficial in motivating disabled students to become more independent. For example, students who use less transportation, counselor time or attendent care might receive free tickets to events or activities on campus. This embedding of an enjoyable activity not only makes attainment of the goal (in this case using less of a service) more satisfying, it also encourages the disabled student to take part in the social activities on campus. The pleasure of an enjoyable activity and the satisfaction of goal achievement leads to a feeling of well being and enhances striving still further.

Another approach might be to pair an older disabled student with an incoming freshman. This would give a younger student an opportunity to view and talk with an older person who knows the ropes.

While many student service programs concentrate on assisting students during the first year this study suggests assistance may be necessary beyond this period. This is particularly important for the younger severely disabled student.

In summary, this research shows that pre- and post-test differences are functions of disability, age, and sex, while residual post-test and percentage of change scores are functions of program use and age. These findings, in turn, suggest the need for personnel involved in delivering services to consider constructing program services to promote independence.

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TABLE 1

COEFFICIENTS, T STATISTICS,R SQUARED, MEANS AND STANDARD DEVIATIONS
FOR PREDICTING DISABLED STUDENTS ACADEMIC INTEREST SCORES ON THE SAMS

Variable	Constant	Program Use	Disability	Age	Female	R-Squared	$\bar{X}$	SD
Pretest	33.32		-1.64	.29	9.63	.21	40.96	11.87
			(-2.21)***	(2.08)***	(4.03)***			
Posttest	25.28		-1.95	.53	7.96	.20	37.50	13.11
			(-2.37)***	(3.33)***	(2.99)***			
Residual Posttest	-2.08	-.21		.27		.12		
		(-2.48)***		(2.98)***				
% Change	-.12	-.06		.07	--	.15		
		(-2.75)***		(2.98)***	--			

TABLE 2

COEFFICIENTS, T STATISTICS, R SQUARED, MEANS AND STANDARD DEVIATIONS
FOR PREDICTING DISABLED STUDENTS ACADEMIC DRIVE - CONFORMITY SCORES ON THE SAMS

Variable	Constant	Program Use	Disability	Age	Female	R-Squared	$\bar{X}$	SD
Pretest	55.36		--	--	4.55	.07	55.28	9.63
			--	--	(2.12)***			
Posttest	48.59		--	.15	5.31	.06	52.82	10.47
			--	(1.07)*	(2.29)**			
Residual Posttest	-2.07	--		.15	--	.02		
		--		(1.42)*	--			
% Change	-.11	--		.004	--	.05		
		--		(2.00)***	--			

TABLE 3

COEFFICIENTS, T STATISTICS, R SQUARED, MEANS AND STANDARD DEVIATIONS
FOR PREDICTING DISABLED STUDENTS STUDY METHODS SCORES ON THE SAMS

Variable	Constant	Program Use	Disability	Age	Female	R-Squared	$\bar{X}$	SD
Pretest	42.74		--	--	7.90	.10	46.30	12.75
			--	--	(7.88)***			
Posttest	34.08		-1.31	.38	8.18	.14	43.86	12.26
			(-1.48)*	(2.36)***	(2.94)***			
Residual Posttest	-1.09	-.23		.28	--	.08		
		(-2.07)***		(2.42)***	--			
% Change	-.11	-.01		.01	--	.13		
		(-2.29)***		(3.03)***	--			

TABLE 4

COEFFICIENTS, T STATISTICS, R SQUARED, MEANS AND STANDARD DEVIATIONS
FOR PREDICTING DISABLED STUDENTS COMPOSITE SCORES ON THE SAMS

Variable	Constant	Program Use	Disability	Age	Female	R-Squared	$\bar{X}$	SD
Pretest	125.78		-2.50	.48	26.07	.18	142.02	30.17
			(-1.27)*	(1.29)*	(4.16)***			
Posttest	102.22		-3.39	1.16	25.76	.22	133.48	31.41
			(-1.69)**	(3.07)***	(4.05)***			
Residual Posttest	122.51	-.49		.89	--	.06		
		(1.21)*		(2.16)***	--			
% Change	-.11	-.004		.01	--	.12		
		(-2.03)***		(2.97)***	--			

Note. * $p < .30$; ** $p < .10$; *** $p < .05$.

TABLE 5

PARTIAL CORRELATION AND T STATISTICS FOR THE SUBSCALE ACADEMIC INTEREST AMONG DISABLED FRESHMEN STUDENTS

Variables	Program Use Partial Correlation	Disability Index Partial Correlation	Age Partial Correlation	Female Partial Correlation
Pretest		-.23	.22	.39
		(-2.21)***	(2.08)***	(4.03)***
Posttest		-.25	.34	.31
		(-2.37)***	(3.33)***	(2.99)***
Residual Posttest	-.25		.29	-.15
	(-2.48)***		(2.98)***	(-1.40)*
% Change	-.28		.30	--
	(-2.75)***		(2.98)***	--

TABLE 6

PARTIAL CORRELATION AND T STATISTICS FOR THE SUBSCALE ACADEMIC DRIVE - CONFORMITY AMONG DISABLED FRESHMEN STUDENTS

Variables	Program Use Partial Correlation	Disability Index Partial Correlation	Age Partial Correlation	Female Partial Correlation
Pretest		--	--	.22
		--	--	(2.12)***
Posttest		--	.12	.24
		--	(1.07)*	(2.29)***
Residual Posttest	--		.15	--
	--		(1.42)*	--
% Change	--		.21	--
	--		(2.00)***	--

TABLE 7

PARTIAL CORRELATION AND T STATISTICS FOR THE SUBSCALE STUDY METHODS AMONG DISABLED FRESHMEN STUDENTS

Variables	Program Use Partial Correlation	Disability Index Partial Correlation	Age Partial Correlation	Female Partial Correlation
Pretest		--	--	.30
		--	--	(2.88)***
Posttest		-.16	.25	.31
		(-1.48)*	(2.36)***	(2.94)***
Residual Posttest	-.21		.24	--
	(-2.07)***		(2.42)***	--
% Change	-.25		.32	--
	(-2.29)***		(3.03)***	--

TABLE 8

PARTIAL CORRELATION AND T STATISTICS FOR THE SUBSCALE COMPOSITE AMONG DISABLED FRESHMEN STUDENTS

Variables	Program Use Partial Correlation	Disability Index Partial Correlation	Age Partial Correlation	Female Partial Correlation
Pretest		-.13	.13	.41
		(-1.27)*	(1.29)*	(4.16)***
Posttest		-.18	.31	.40
		(-1.69)**	(3.07)***	(4.05)***
Residual Posttest	-.13		.22	--
	(-1.21)*		(2.16)***	--
% Change	-.22		.31	--
	(-2.03)***		(2.97)***	--

Note. * $p < .30$; ** $p < .10$; *** $p < .05$.